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ABSTRACT

One hundred ninety-three interior design college students were administered the Group Embedded Figures Test, a measure of field dependence, in order to evaluate two of Witkin's hypotheses regarding career choice. The career-differentiation hypothesis predicted that students electing to major in interior design would be field independent because interior design, like art and architecture, requires restructuring and analyzing skills. This hypothesis was supported as results showed that interior design majors were field independent. The training hypothesis predicted that cognitive restructuring skills associated with field independence would be increased as students progressed from the freshman to senior year of study. Results consistent with the training hypothesis showed an increase in cognitive restructuring skills as students increased the amount of course work in interior design. However, this result may have been due to field-dependent students switching to other majors more compatible with their cognitive style. Results also showed that field independence was related to achievement in a number of specific courses in the interior design major. (Author/KC)

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Field Dependence and Vocational Choice of Interior Design Students

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Abstract

One hundred ninety three interior design students were administered a measure of field dependence in order to evaluate two of Witkin's hypotheses regarding career choice. The career-differentiation hypothesis predicted that students electing to major in interior design would be field independent because interior design, like art and architecture, requires restructuring and analyzing skills. This hypothesis was supported as results showed that interior design majors were field independent. The training hypothesis predicted that cognitive restructuring skills associated with field independence would be increased as students progressed from the freshman to senior year of study. Results consistent with the training hypothesis showed an increase in cognitive restructuring skills as students increased the amount of course work in interior design. However, this result may have been due to field-dependent student's switching to other majors more compatible with their cognitive style. Results also showed that field independence was related to achievement in a number of specific courses in the interior design major.

Field Dependence and Vocational Choice of Interior Design Students

A central tenant of the theory of field dependence (Witkin & Goodenough, 1981) is that individuals differ in the extent to which they rely on internal or external sources of information. Field-dependent individuals rely primarily on external frames of reference and consequently develop interpersonal competencies or skills, while field-independent individuals rely primarily on internal frames of reference and develop cognitive restructuring and analyzing skills. Witkin, Moore, Goodenough and Cox (1977), concluded that field dependence had educational implications in terms of how students learn, how teachers teach, how students and teachers interact, and how students make vocational and career choices.

This study provides information relevant to two theoretical issues related to career decisions. One theoretical issue concerns the career-differentiation hypothesis which states that individuals of differing cognitive styles select college courses and majors which are compatible with their cognitive styles. A second and related theoretical issue concerns the training hypothesis. This hypothesis raises the possibility that an individual's degree of field dependence is influenced by course work leading to a career. In other words it is possible that cognitive restructuring skills associated with field independence are enhanced or further developed by course work leading to careers preferred by field-independent individuals.

Research reviewed by Witkin and Goodenough (1981) suggests that field-dependent individuals favor courses, majors and careers which are compatible with their social orientations and interpersonal skills such as elementary teaching, clinical psychology, nursing, sociology, and social work. Field-independent individuals favor courses, majors and careers which are compatible with their cognitive restructuring and analyzing skills such as architecture, art, engineering, math, and science. Interior design as a discipline of study would seem to require cognitive restructuring skills similar to that required of architecture and art. However, to

date, no studies have been reported which consider the cognitive styles of students majoring in interior design.

Evidence regarding career characteristics cited by Witkin and Goodenough (1981) is provided by reports which have typically studied practicing architects and artists. While this evidence is consistent with the career-differentiation hypothesis, it does not directly address the training hypothesis. Since a limited number of studies involving architects or artists have considered the training hypothesis, the present study considers the extent to which increases in course work in interior design leads to greater degrees of field independence as students progress from the freshman year to the senior year of study.

The purpose of this study was to examine the career-differentiation hypothesis and the training hypothesis as they relate to students majoring in interior design. The major questions addressed by this study were: (a) Is interior design a program of study preferred by individuals with a field independent cognitive style? (b) Does continued study in interior design lead to an increase in cognitive restructuring skills? (c) Is field dependence-independence related to academic achievement of interior design majors.

Method

Interior design majors at a large midwestern university participated in the study. At the time of testing, all students were enrolled in a core course required for the interior design major. A total of 193 students (181 females and 12 males) completed the Group Embedded Figures Test (GEFT) and a questionnaire. Testing was done in the student's classrooms and took approximately 25 minutes.

The GEFT (Witkin, Oltman, Raskin, & Karp, 1971) is one of several instruments used to assess an individual's standing on the field-dependent-independent dimension. It requires an individual to locate a simple figure embedded in a complex design. Scores range from 0 to 18, and low scores are thought to reflect field dependence while high scores are thought to reflect field independence.

The questionnaire consisted of 15 questions. It asked for demographic information, and data regarding achievement in courses required for interior design majors.

Results and Discussion

Overall, the mean GEFT score for interior design majors was 13.48 (SD = 3.83). There was no significant difference ($t < 1$) between the mean for females (M = 13.48) and the mean for males (M = 13.50). Consequently, data for males and females were combined for analyses purposes.

The career-differentiation hypothesis was evaluated by comparing the mean GEFT score for interior design majors to normative data presented in the test manual (Witkin, et al., 1971). Table 1 presents quartile distributions for Witkin's normative groups and for interior design majors. As illustrated in Table 1, the distribution for interior design majors has a higher mean value than either of the norm groups. In terms of effect sizes, the interior design students scored .64 of a standard deviation above the female group and .36 above the male group. Also, it should be noted that the range of GEFT scores for the interior design sample is wider at the field dependent end of the distribution (1st and 2nd quartiles) and narrower at the field independent end of the distribution (3rd and 4th quartiles). In fact, for the interior design students, the distribution was negatively skewed (-1.06) indicating that a ceiling existed for students in the upper quartile. These comparisons indicate that, relative to the norm group, interior design majors are relatively more field independent.

Table 1
Quartile Distributions of GEFT

QUARTILE	NORM FEMALES	NORM MALES	INTERIOR DESIGN
1st	0- 8	0- 9	0-11
2nd	9-11	10-12	12-14
3rd	12-14	13-15	15-16
4th	15-18	16-18	17-18
MEAN	10.80	12.00	13.48
SD	4.2	4.1	3.83
N	242	155	193

This result indicates that interior design is a discipline preferred by field-independent students and is consistent with studies showing that other visually based academic disciplines such as architecture (Peterson & Sweitzer, 1973) and art (Holtzman, Swartz & Thorpe, 1971) appeal to individuals with field-independent cognitive styles.

The training hypothesis was evaluated by considering the mean GEFT for freshman, sophomore, junior and seniors. These means are presented in Table 2. An orthogonal polynomial analysis of this data revealed a nonsignificant quadratic component ($F < 1$) and a nonsignificant cubic component ($F < 1$). However, the linear component approached significance ($F = 2.77$, $df = 1,189$, $p < .09$) suggesting that their is a linear trend in GEFT scores from the freshman to the senior year. Thus as interior design students progress in their program of study, there is an increase in GEFT scores suggesting that students become more field independent as they take more course work in interior design. This finding is consistent with Witkin and Goodenough's (1981) training hypothesis. The evidence is, however, ambiguous with regard to the extent that training derived from increases in course work leads to the increase in GEFT scores. It is possible that field-dependent students find course work in interior design incompatible with their cognitive style and consequently withdraw from the program to pursue other programs of study more compatible with their cognitive style. Thus, the increase in GEFT scores may reflect a self-selection factor rather than a training effect. A direct test of these possibilities will be obtained when the freshman participating in this study are tested again during their senior year.

Table 2

GEFT scores by Grade

CLASS	N	MEAN	SD
FRESHMAN	60	12.72	4.26
SOPHOMORE	45	13.67	3.23
JUNIOR	43	13.86	3.74
SENIOR	45	14.00	3.80
TOTALS	193	13.48	3.83

Evidence bearing on the relationship between field dependence-independence and academic achievement was obtained from the questionnaire. Students were asked to supply information regarding their aptitude scores, grade point average (GPA), grades in core course in interior design, and in required courses in technical graphics. Correlations between these scores and GEFT were computed. Table 3

presents the correlations for the Scholastic Aptitude Tests (SAT) and GPA.

Table 3
GEFT and Aptitude Correlations

APTITUDE	N	CORRELATION	P-VALUE
SAT-V	98	.14	.18
SAT-M	98	.47	.0001
GPA	153	.20	.01

As illustrated in Table 3, GEFT scores were not significantly related to SAT-V, but were for SAT-M and GPA. The results for SAT scores are generally consistent with those reported by Witkin and associates (Witkin & Goodenough, 1981; Witkin, Moore, Goodenough, & Cox, 1977; Witkin, Moore, Oltman, Goodenough, Friedman, Owen, & Raskin, 1977). The significant correlation between GEFT and GPA runs counter to Witkin's contention that field dependence is unrelated to overall academic achievement. It is, however, consistent with a large number of studies showing small to moderate correlations between measures of field dependence and GPA (see Davis, 1989; In Press).

Table 4 presents correlations between GEFT and core courses in interior design. The correlations are positive, but only one is statistically significant. The significant correlation was for a space planning course.

Table 4
GEFT and Grades in Interior Design Courses

Course	N	CORRELATION	P-VALUE
INTD 155	124	.09	.30
INTD 200	125	.11	.20
INTD 250	86	.27	.01
INTD 300	46	.23	.13
INTD 350	42	.16	.32
INTD 400	9	.03	.92

Table 5 presents correlations between GEFT and grades in required technical graphics courses. These significant correlations indicate that field-independent students achieve higher grades than field-dependent students. These results are consistent with other studies showing

significant and positive correlations with drafting and technical graphics courses (Guster, 1986; Thomas, 1983; 1986).

Table 5

GEFT and Grades in Technical Graphics Courses

COURSE	N	CORRELATION	P-VALUE
TG 220	120	.25	.006
TG 221	125	.36	.0001
TG 321	98	.38	.0001

Summary and Conclusions

The purpose of this study was to evaluate Witkin's theory of field dependence as it pertained to students choosing to prepare for careers in interior design. One hundred ninety three interior design majors were administered the GEFT as a measure of field dependence and completed a questionnaire regarding academic achievement. Results indicated that interior design majors were field independent supporting Witkin's career-differentiation hypothesis that individuals of differing cognitive styles select college courses and majors which are compatible with their cognitive styles. Results also indicated that interior design students increased their degree of field independence as they progressed from the freshman year to the senior year of study. While this evidence was found to be consistent with Witkin's training hypothesis, it was recognized that the increasing GEFT scores could also have been due to field-dependent students withdrawing from the major. Finally, significant correlations were obtained between field dependence and and number of measures of academic performance.

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